less than the diameter of the wire making up the bare stent **30**. Preferably, the space is no greater than half a diameter of the wire.

Having the distal surface **639** be the load-bearing surface of the proximal apices **32** ensures expansion of each and every-one of the distal apices **32** from the apex release assembly **690**. The proximal surface **641** of the distal apex head **636** (see FIG. **30**) meets with the interior surfaces of the proximal apex body **638** to help carry the apex load because the apices of the bare stent **30** are captured therebetween when the apex capture device **634** is closed. Complete capture of the bare stent **30**, therefore, fully transmits any longitudinal forces acting on the bare stent **30** to both the guidewire lumen **620** and apex release lumen **640**, making the assembly much stronger. Such capture can be clearly seen in the cut-away view of the proximal apex body **638** in FIG. **31**. For release of the apices **32** of the bare stent **30**, the proximal apex body **638** moves leftward with respect to FIGS. **30** to **33** (compare FIGS. **30** and **31** with FIG. **32**). Because friction exists between the apices **32** and the "teeth" of the proximal apex body **638** when the apices **32** are captured, the apices **32** will also try to move to the left along with the proximal apex body **638** and, if allowed to do so, possibly would never clear the "teeth" to allow each apex **32** to expand. However, as the proximal apex body **638** disengages (moves in the direction of arrow C in FIG. **31**), direct contact with the distal surface **639** entirely prevents the apices **32** from sliding in the direction of arrow C along with the proximal apex body **638** to ensure automatic release of every captured apex **32** of the bare stent **30**. Because the proximal apex body **638** continues to move in the direction of arrow C, eventually the "teeth" will clear their respective capture of the apices **32** and the bare stent **30** will expand entirely. The release position of the distal apex head **636** and the proximal apex body **638** is shown in FIGS. **14** and **32**, and corresponds to the position of the apex release assembly **690** in FIG. **17**. As can be seen, tapers on the distal outer surfaces of the proximal apex body **638** further assist in the prevention of catching the proximal apices **32** of the bare stent **30** on any part of the apex capture device **634**. In this configuration, the distal surfaces **639** bear all the load upon the bare stent **30** and the fingers of the proximal apex body **638**.

Simply put, the apex capture device **634** provides support for load placed on the stent graft **1** during advancement A of the inner sheath **652** and during withdrawal of the inner sheath **652** (i.e., during deployment D). Such a configuration benefits the apposition of the bare stent **30** by releasing the bare stent **30** after the entire graft sleeve **10** has been deployed, thus reducing the potential for vessel perforation at the point of initial deployment.

When the stent graft **1** is entirely free from the inner sheath **652** as shown in FIG. **24**, the proximal handle **678** is, then, substantially at or near the third position (deployment position) shown in FIG. **10**.

The stent graft **1** is, now, securely placed within the vessel **700** and the entire portion **630**, **650**, **660** of the assembly **600** may be removed from the patient.

While the preferred embodiments of the invention have been illustrated and described, it will be clear that the invention is not so limited. Numerous modifications, changes, variations, substitutions, and equivalents will occur to those skilled in the art without departing from the spirit and scope of the present invention as defined by the appended claims.

What is claimed is:

1. A method of implanting a prosthesis in a patient at a treatment site within a blood vessel, comprising the steps of:

a) advancing an outer catheter of a prosthesis delivery system in the patient distal to the treatment site, the outer catheter defining an inside diameter and wherein the treatment site is a curved portion of the aortic arch;

b) advancing an inner sheath containing a prosthesis that is asymmetric about a major longitudinal axis, the inner sheath having greater flexibility than the outer catheter and an outside diameter that is greater than the inside diameter of the outer catheter, and a guidewire lumen of the delivery system from the outer catheter and then through the curved portion of the aortic arch along a guidewire while the outer catheter remains stationary relative to the patient, whereby advancement of the inner sheath and the guidewire lumen delivers the prosthesis to a position within the curved portion of the aortic arch and causes rotational alignment of the prosthesis within the curved portion of the aortic arch;

c) retracting the inner sheath to deploy the prosthesis from within the inner sheath at the curved portion of the aortic arch; and

d) retracting the delivery system from the patient.

2. The method of claim **1**, further comprising the step of retracting the inner sheath into the outer catheter prior to retracting the delivery system from the patient.

3. The method of claim **1**, wherein the guidewire lumen is curved.

4. The method of claim **1**, wherein the prosthesis includes a longitudinal support member positioned asymmetrically about the major longitudinal axis of the prosthesis to thereby cause the rotational alignment within the curved portion of the aortic arch.

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